DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE, NORTHEAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

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19 April 2006

Ms. Lisa Bradford (3HS11), Remedial Project Manager
U.S. EPA Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

SUBJECT: DRAFT TECHNICAL MEMORANDUM OF RISK ASSESSMENT FOR SITE 05 - FIRE TRAINING AREA, SOIL (OU 4), MAY 2005, NAVAL AIR STATION JOINT RESERVE BASE, WILLOW GROVE, PA

Dear Ms. Bradford:

The Navy's responses to EPA comments on the subject draft Technical Memorandum are provided as enclosure (1). Based on these comments and responses, the document will be revised and resubmitted as final. We expect to submit the final document by May 01, 2006.

If you have any questions, please do not hesitate to contact Mr. Curt Frye at (610) 595-0567, ext. 142.

Sincerely,

Robert F. LEWANDOWSKI, P.E.
By direction of BRAC PMO

Encl:
(1) Navy Responses to Comments from USEPA Region III on the Draft Technical Memorandum of Risk Assessment for Site 05 - Fire Training Area, Soil (OU 4), MAY 2005 (EPA Comments dated November 22, 2005)

Copy to:
J. Edmond, NASJRB Willow Grove
C. Frye, EFA Northeast
A. Flipsie, PADEP
R. Turner, TtNUS

NAVY RESPONSE TO EPA COMMENTS
DRAFT TECHNICAL MEMORANDUM OF RISK ASSESSMENT
EVALUATION FOR SITE 5 – FIRE TRAINING AREA
SOIL (OU 4), MAY 2005

(EPA Comments dated November 22, 2005)

General Comment: I have reviewed the NASJRB Willow Grove, Risk Assessment Evaluation for Site 5 (Fire Training Area Soil (OU#4) and have the following comments to offer:

General Response: Refer to the Meeting Summary minutes of the Project Update Meeting held November 30, 2005, Item 2, third paragraph. EPA (Linda Watson) stated that since these HHRA's were "old" (first performed in the late 1990's) she expects to accept the Tech Memo's (as previously agreed) after the Navy responds to her comments.

Specific Comments:

1. *Section 2.1. The last sentence in the first paragraphs discusses Navy policy in concurrence with up-front background elimination (COPCs exceeding toxicity screening criteria but were not evaluated for risk because they do not exceed background). EPA disagrees with this approach and thus recommends background elimination at the conclusion of the risk assessment per EPA guidance, "The Role of Background Soil Constituents in Superfund Risk Assessment and Risk Management, "OSWER, August 14, 2001 and "Role of Background in the CERCLA Cleanup Program, OSWER, April 26, 2002. In addition, a few of the background statistical methods used in 1997 have since been found to be unacceptable therefore, please indicate the background test statistic applied 1997. Further, since the inorganic background COPCs are not included in the quantitative risk assessment, all background data and statistical results must be included in the report for verification.*

   Response: Disagree. The HHRA was originally prepared in 1997 following EPA guidance and with a methodology agreed to by all parties at the time. Meanwhile in 2005, Navy guidance requires a comparison to background before COPC selection (contrary to EPA guidance). The results of the statistical analysis for background testing were included in the Remedial Investigation Report for Site 5 – Fire Training Area (TtNUS, 2002). Future HHRAs will include all analytical results, background data and the results of all statistical tests. Also, it should be noted that while the recommendations provided in both EPA and Navy guidance documents for statistical testing have changed since 1997, the results/conclusions of the analyses performed in 1997 were reviewed during the preparation of the Technical Memorandum for Site 5 and the overall results/conclusions of tests are still considered valid. Also, please see qualitative risk assessment of chemicals eliminated on the basis of background comparisons in Section 3.5. The Navy has not ignored the assessment of chemicals detected at concentrations exceeding toxicity screening levels but determined to be present at background concentrations. In many respects, the difference between Navy and EPA policy on this issue is a matter of "where" the assessment is placed in a risk assessment.

   No change to the subject Tech Memo for Site 5 soil, that was prepared for the limited purpose of comparing certain aspects of the 1997 HHRA for Site 5 to results of calculations using more current (2005) guidance criteria, is proposed.

2. *Section 2.1. Surface Soil. The report states, "Concentrations of aluminum, antimony, arsenic, cadmium, and manganese also exceeded the RBC-based toxicity screening levels but were within background levels." This information must be verified. See comment #1.*

Response: Concur. The results of the statistical analysis for background testing were included in the Remedial Investigation Report for Site 5 – Fire Training Area (TtNUS, 2002). See response to comment #1. No change to the subject Tech Memo for Site 5 is proposed.

3. *Section 2.1. Subsurface Soil. The report states, "Concentrations of aluminum and arsenic also exceeded the RBC-based toxicity screening levels but were within background levels." This information must be verified. See comment #1.*

Response: Concur. The results of the statistical analysis for background testing were included in the Remedial Investigation Report for Site 5 – Fire Training Area (TtNUS, 2002). See response to comments #1 and #2. No change to the subject Tech Memo for Site 5 is proposed.

4. *Section 2.1. The report indicates separate screening was performed for the soil-to-groundwater pathway. Although the current screening is acceptable, EPA recommends combining the surface soil and subsurface soil results and then screen against the soil-to-groundwater screening results.*

Response: Disagree. The Navy prefers to screen surface and subsurface soil separately to aid in identifying the location of potential sources when there are exceedances of the screening criteria. No change to the subject Tech Memo for Site 5 is proposed.

5. *Section 2.1, page 2-4. Has the groundwater pathway been evaluated? The report indicates chloroform, ethylbenzene, xylenes, and SVOCs were not detected in groundwater but does not discuss if 1,1,2-trichlorethane, benzene, tetrachloroethene, total -dichloroethene, and trichloroethene were detected in groundwater. The soil-to-groundwater pathway suggest these contaminants may be present in groundwater.*

Response: Concur. Groundwater was evaluated in the original RI report and in a separate HHRA technical memorandum for groundwater at Site 5. Also, there is a Feasibility Study (FS) for remedial action at Site 5 groundwater (OU 2) in the hands of EPA and PADEP awaiting final disposition of these Tech Memos before a groundwater remedy can be selected. 1,1,2-Trichloroethane, benzene, tetrachloroethene, trichloroethene, and cis- and trans-1,2-dichloroethene were detected in groundwater samples collected in August 2005. Benzene (4 of 33 samples) and trans-1,2-dichloroethene (1/33) were detected infrequently while 1,1,2-trichloroethane (15/33), tetrachloroethene (14/33), trichloroethene (17/33), and cis-1,2-dichloroethene (15/33) were frequently detected during the latest round of sampling.

Section 2.1 has been revised to briefly discuss the groundwater contaminants and to reference the Site 5 groundwater-specific HHRA Tech Memo and FS.

6. *Section 3.4. The paragraph discusses the potential uncertainty associated for the resident and occupational worker exposed to subsurface soil and thus a risk ratio technique is applied to predict risk. This method is unacceptable because use of the Region 3 RBC's only account for the ingestion pathways and not the dermal nor inhalation pathways. Therefore, the presented risk results are under estimated. EPA recommends evaluating current residential exposure to surface soil alone and the future resident and occupational workers from exposure to surface soil and subsurface soil combined (e.g., mixture). Finally, all potential receptors identified in Table 1.0 must be present in RAGS D format via quantitative risk assessment.*

Response: Concur. RAGS Part D Tables 1 through 10 will be included in all future human health risk assessments.

The Site 5 Tech Memo was prepared for the limited purpose of evaluating results of the existing Site 5 HHRA that was prepared in 1997 according to methodology agreed upon by EPA and Navy. While it is true that the EPA Region 3 RBCs only consider exposures through incidental ingestion of soil, exposures through dermal contact and inhalation for the chemicals of potential concern in subsurface soil at Site 5 (PAHs and inorganics) are insignificant in comparison to exposures through incidental ingestion. For example, benzo(a)pyrene was the major contributor to the cancer risk for a residential exposed to subsurface soil. The residential RBC for benzo(a)pyrene is 0.087 mg/kg. If the RBC were to be re-calculated to also included exposures through dermal contact and inhalation the revised RBC would be 0.0.62 mg/kg. Consequently, estimating risk for the chemicals of potential concern in subsurface at Site 5 using the Region 3 RBCs does not significantly underestimate risks.

The Navy suggests that before combining surface and subsurface soil data sets, the concentrations of chemicals in surface and subsurface soil be evaluated to determine if it is appropriate to combine the data sets. If the chemical concentrations in surface and subsurface soil are similar then it would be appropriate to combine the data. It would not be appropriate to combine the data if chemical concentrations in one interval were higher than the other. For example, if chemical concentrations in surface soil were significantly higher than those in subsurface soil, the chemical concentrations in surface soil would be diluted by combining surface and subsurface soil together and thereby resulting in an underestimation of risk.

No change to the subject Tech Memo for Site 5 is proposed.

7. *Section 3.5, page 3-4. The paragraph attempts to provide a rationale for not including inorganic background contaminants in the quantitative risk assessment. The last paragraph states, "Based on this discussion, the results and conclusions of the risk assessment are not affected by the elimination of aluminum, antimony, arsenic, cadmium, and manganese." If the results and conclusions of the risk assessment are not affected by these inorganics, why are the quantitative risks results not being presented instead of a text paragraph that offers no bases for decision making? The presented paragraph is not acceptable as the bases for elimination of inorganic "potential" background contaminants and thus background can only be eliminated by use of appropriate statistical testing which should be presented in the report.*

Response: Disagree. Please see response to Comment No. 1. No change to the subject Tech Memo for Site 5, that was prepared for the limited purpose of comparing certain aspects of the 1997 HHRA for Site 5 to results of calculations using more current (2005) guidance criteria, is proposed. However, the Navy agrees that future HHRAs will include the results of the statistical testing using current EPA approved methodology.

The intent of Section 3.5 of the Site 5 Tech Memo was to provided a qualitative discussion on the potential risks associated with exposures to aluminum, antimony, arsenic, cadmium, and manganese and the impact of not quantitatively evaluating these chemicals in the updated HHRA. This section was not intended to provide justification for the elimination of inorganic chemicals on the basis of background. The Navy agrees that statistical procedures should be used for determining if inorganics are present at background levels. Statistical procedures justifying the elimination of these chemicals on the basis of background were presented in the RI report. Future HHRAs will include the results of the statistical testing using current EPA approved methodology.

No change to the subject Tech Memo for Site 5 is proposed.

8. *Table 1.0. Since the EPA's default PEF value is not being applied, the report must provide the site specific parameters used to derive the site specific PEF value.*

Response: Concur. The site specific parameters used in calculating the site specific PEF along with an example calculation will be included in all future HHRAs. The site specific parameters used in the Tech Memo were:

- inverse of the ratio of the geometric mean air concentration to the emission flux at the center of a square source (Q/C_{wind}) – 87.4 g/m^2-s per kg/m^3,
- fraction of vegetative cover (V) – 0.5,
- mean annual wind speed (U_m) 4.2 m/sec,
- equivalent threshold value of winds speed at 7 meters (U_t) – 11.32 m/sec,
- function dependent of U_m/U_t derived using Cowherd [F(x)] = 0.0807.

9. *Table 2.1. The residential RBC for barium has changed. The most recent RBC is 1.6E+04. This change does not affect the screening results.*

Response: Concur. Noted and agreed. No change to the subject Tech Memo for Site 5 is proposed.

10. *Table 2.2. The soil-to-groundwater screening value for barium has changed. The most recent soil-to-groundwater RBC is 6.0E+03. This does' not change the screening results.*

Response: Concur. Noted and agreed. No change to the subject Tech Memo for Site 5 is proposed.

11. *Table 2.2. The soil-to-groundwater screening value for hexavalent chromium is 4.2E+01N. This value is below the maximum detected chromium value and thus changes the screening results. Chromium should be included as a COPC.*

Response: Concur. Chromium will be retained as a COPC for the potential migration from soil to groundwater pathway. The Site 5 Soil Tech Memo will be revised to reflect this change.

12. *Table 11. The New EPC values cannot be verified since the analytical data is not included in the report. Please provide the analytical data used to derive the New EPC values.*

Response: Disagree. The complete analytical data set was presented in the Remedial Investigation Report for Site 5 – Fire Fighting Area (TtNUS, 2002). In future HHRAs, the analytical data will be included as an appendix.

13. *Tables 15 & 16. See comment #5.*

Response: The Navy believes the Reviewer is referring to comment #6 and not comment #5. Please see response to comment #6.

14. *Table 2.3. The RBC for toluene has changed. The most recent RBC is 6.3E+03N. This change does not affect the screening results.*

Response: Concur. Noted and agreed. No change to the subject Tech Memo for Site 5 is proposed.

15. *Table 2.4. The soil-to-groundwater screening value for 1,1,1-trichloroethane is 3.2E+01N. This value is below the maximum detected 1,1,1-trichloroethane value and thus changes the screening results. 1,1,1-trichloroethane should be included as a COPC.*

Response: Agreed. The RBC for 1,1,1-trichloroethane has changed since the technical memorandum was prepared. Based on the revised RBC, 1,1,1-trichloroethane would be included as a COPC for the potential migration of chemicals from soil to groundwater pathway. The newly revised value will be used for all future HHRA's. No change to the subject Tech Memo for Site 5 is proposed.

16. *Table 2.4. The soil-to-groundwater screening value for toluene has changed. The most recent soil-to-groundwater RBC is 2.7E+01N. This does not change the screening results.*

Response: Concur. Noted and agreed. No change to the subject Tech Memo for Site 5 is proposed.

17. *Table 3.1. The reported maximum detected concentration for iron does not agree with the maximum detected value reported in Table 2.1 (reported as 21600 mg/kg). Since the data is not included in the report, the maximum detected value could not be verified. Please include all analytical data in the report that was used to assess risk.*

Response: Concur. The concentration reported in Table 2.1 (21,600 mg/kg) is the correct maximum detected value for iron. Table 3.1 will be corrected. The other statistics presented in Table 3.1 for iron are correct. The analytical data was presented in the Remedial Investigation Report for Site 5 – Fire Fighting Area (TtNUS, 2002). In future HHRAs, the analytical data will be included as an appendix.

18. *Tables 3.1 and 3.2. The EPC nor the test statistics could not be verified since the analytical data is not included in the report. See comment #11.*

Response: Disagree. The Navy believes the Reviewer is referring to comment #17 and not comment #11. The analytical data was presented in the Remedial Investigation Report for Site 5 – Fire Fighting Area (TtNUS, 2002). In future HHRAs, the analytical data will be included as an appendix.

No change to the subject Tech Memo for Site 5 is proposed.

19. *Table 7.1. Please report the Hazard Quotient in scientific notation.*

Response: EPA's Risk Assessment Guidance for Superfund Volume 1 Human Health Evaluation Manual (1989) (RAGS Part A) and EPA's Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments) (2001) specify that hazard quotient should be reported in a fixed format.

However, per your request, the HQ will be presented in both fixed format and scientific notation in the final revision of the Site 5 Soil Tech Memo.